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AUTHOR Winans, Glen T.
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ABSTRACT

General fund budgetary determinants in 27 academic departments at the University of California Santa Barbara were studied for the period from 1977/78 through 1983/84. The focus was resource allocation and utilization within departments of the College of Letters and Science. The research design included a pooled multivariate regression analysis of 17 variables plus a series of interviews with 30 randomly selected department chairpersons and department staff. The combined quantitative and qualitative results confirmed the importance of disciplinary differences in budgeting, reaffirmed previous research findings about the importance of departmental power and prestige in budget allocations, and revealed that student enrollments may not be a major factor influencing department level budget allocations during times of relative stability. The qualitative results also identified the importance of an economic dimension, an interpersonal dimension, and a reputational dimension for departments in the budget allocation process, while confirming that the external or macro model by which public universities acquire resources is not necessarily applicable to the internal or micro model by which resources are allocated to departments. (Author/SW)

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DETERMINANTS OF BUDGET ALLOCATIONS TO ACADEMIC DEPARTMENTS: A CASE STUDY

Paper Presented at the Annual Meeting of the
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By:

Dr. Glen T. Winans
Assistant Provost
College of Letters and Science
University of California
Santa Barbara, CA 93106

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The George Washington
University
One Dupont Circle, Suite 630
Washington, D.C. 20036-1183
(202) 296-2597

This paper was presented at the Annual Meeting of the Association for the Study of Higher Education held at the San Diego Hilton in San Diego, California, February 14-17, 1987. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

ABSTRACT

This case study examines general fund budgetary determinants in twenty-seven academic departments at UC Santa Barbara over the seven year period from 1977/78 through 1983/84. The research design included a pooled multivariate regression analysis of seventeen variables plus a series of interviews with thirty randomly selected Department Chairpersons and Department Staff. The combined quantitative and qualitative results confirmed the importance of disciplinary differences in budgeting, reaffirmed previous research findings about the importance of departmental power and prestige in budget allocations, and revealed that student enrollments may not be a major factor influencing department level budget allocations during times of relative stability. The qualitative results also identified the importance of economic dimension, an interpersonal dimension, and a reputational dimension for departments in the budget allocation process, while confirming that the external or macro model by which public universities acquire resources is not necessarily applicable to the internal or micro model by which resources are allocated to departments.

INTRODUCTION

Because of the diversity of academic subjects and specializations available to faculty for teaching and research, and to students for learning and studying, the academic segment of universities is by necessity organized into departments or programs. The academic department, therefore, becomes the common ground where faculty and students interact, where knowledge is discovered, and where knowledge is learned.

This research focuses on academic departments as the primary consumers of resources within a public research university. Its purpose is to examine closely the academic resource allocation process by conducting a case study analysis of twenty-seven academic departments within the College of Letters and Science at the University of California, Santa Barbara (UCSB) for the seven year period from 1977/78 through 1983/84. The departments involved in the case study represent a broad cross section of the general liberal arts, including the Creative and Performing Arts, the Humanities, the Mathematics and Sciences, and the Social Sciences. The overall research approach was to isolate common factors between and among disciplinary areas which function as determinants of departmental general fund budget allocations.

The design of the research focuse exclusively on resource elements at the level of expenditure, providing an unusual "bottom-up" perspective to budgets as opposed to the more common "top-down" perspective to budgets. It must be remembered, however, that this bottom-up perspective is limited by its institution specific nature and by the particular conditions and

circumstances unique to UCSB during the seven years under study. The general resource environment on campus during the study period was relatively stable, with modest programmatic growth. If the period had instead been marked by rapid expansion or decline, the quantitative and qualitative results might be quite different. Moreover, the research followed a micro orientation to budgeting, concentrating on the internal parameters of budgetary decision making within the institution, as opposed to the more traditional macro orientation to budgeting that concentrates on the external cause and effect process by which an institution acquires resources. This micro orientation allowed an assessment of participant perceptions and values about instruction and research, and how they are translated into budget allocations.

LITERATURE REVIEW

The available literature on budgeting and financing postsecondary education in the United States is quite extensive, as is the general literature addressing issues of administration and management. However, the majority of this literature does not focus on resource management at the academic department level. A sampling of the available literature that is relevant to departmental budgeting is reviewed below.

Wildavsky (1979) suggests that the intentions of budget-makers do not always match the reality of actual expenditures, and that the generally accepted paradigm of public budgeting as a rational process of ranking objectives, comparing alternatives, and selecting the highest does not describe how budgetary

decisions are made. The political dimension of resource management within higher education also is confirmed in a case study of New York University by Baldridge (1971) which identified the political model of academic decision making in contrast to the bureaucratic or collegial models. Subsequent work by Baldridge, et al (1978), Chaffee (1983), Cohen and March (1974), Dressel (1981), McCorkle and Archibald (1982), Mortimer and McConnell (1978), and Walker (1979) explores various models of institutional governance, noting that academic goals are generally unclear, politicized, and highly contested, and that no single management model fits or describes all institutions or academic decision making situations in American universities.

While noting that academic department budget allocations can generally be based on some formula-driven measure of student enrollment or instructional load, Dressel and Simon (1976) propose that any basic resource allocation framework for academic departments must consider five broad parameters: 1) the existence of a specification and agreement upon the range of departmental functions jointly acceptable to the department, the college, and the university administration; priorities among these; and appropriate time commitments for each; 2) an examination of the characteristics of the instructional load at the departmental level; 3) an initial assignment or agreement between the department chairperson and individual faculty members regarding the components of their instructional loads, with appropriate adjustments for pertinent extramural or extracurricular work and assignments; 4) consideration of physical constraints that might impede the most efficient use of

departmental resources; and 5) recognition that certain aspects of departmental operations, possibly intangible in nature, may be of great importance in the determination of faculty load and assignment of the department budget.

These parameters reflect Dressel's concern with departmental diversity and the many differences between academic disciplines apparent in his other research (Dressel, Johnson and Marcus, 1970; and Dressel and Faricy, 1972), which concludes that the traditional mode of simple incremental budgeting at the departmental level is inappropriate, as disciplinary differences affect the ways in which resources are utilized by departments.

Said (1974) offers several observations concerning the internal resource allocation process, including the conflict between personal (faculty) goals and institutional (administration) goals in resource decision making. Hackman (1983) reports that two kinds of organizational power, environmental power and institutional power, combine to explain a considerable portion of the variance in budget allocations for departments. Environmental power is viewed as the department's relative ability to acquire external resources needed by the organization, while institutional power is seen as the strength of the department's internal roots in the organization. Similarly, in a discussion of nine normative design characteristics desirable for internal budgetary processes within institutions, Cogan (1980) suggests that a department's power to acquire critical resources within an institution is

highly correlated to the department's ability to obtain extramural funds.

Ostran (1974) analyzes resource allocations in colleges and universities by comparing intuitive and numerical methods of decision making. His findings reveal that the greater the degree of resource scarcity, the greater the reliance on numerical decision making, and the greater the degree of resource availability, the greater the reliance on intuitive decision making. Balderston (1973) notes that departments have both complementary and competitive relationships with other academic departments in the budgeting process, creating an inherent contradiction between two equally respectable economic laws of resource commitment and budgetary adjustment (Page 1):

> "Aspirations for programs and for budgetary resources in universities follow the Law of Indefinite Augmentation: there nearly always seems to be a good case for adding a program or increasing a budget component, and there is almost never perceived to be a good case for dropping a program or cutting a budget. This law apparently contradicts another, the Law of Competition at the Margin: the claims made for resources all need to be considered as competing with one another, with the necessity to make adjustments among all of them at the margin to fit allocations within a budgetary ceiling."

Both Breneman (1971) and Garvin (1980) refer to institutions of higher education as "prestige maximizing firms". Breneman views prestige as an important distinguishing characteristic between departments in the resource allocation process since it is an essential feature of the social system within the scientific and academic community. He notes that there exists a reciprocal relationship between the prestige or reputation of an individual faculty member within his or her disciplinary area and

the prestige of the department in which they work. Garvin observes that internal allocations are closely related to a department's a) prestige, b) size of teaching staff, c) number of undergraduate and graduate students, and d) volume of sponsored research; observing that the central administration generally follows three guidelines in allocating funds to departments: 1) in times of prosperity, efficiency is less important; 2) when facing choices between equity or prestige, the less costly alternative usually prevails; and 3) when attempting to upgrade programs, immediate short-run returns are generally pursued.

Freeman (1967) studies the supplies and services component of departmental general fund budgets in thirty-two academic departments at Michigan State University and attempts to develop equations for disciplinary clusters of departments to be used as predictors of expenditure levels. Freeman determines that application of such formulas would only perpetuate existing expenditure relationships and that other factors must exist to explain the expenditure variations between departments.

Dunworth and Cook (1976) examine the dilemma of economies and diseconomies of scale within universities. They recommend establishing base budgets in accordance with student workload patterns and then delegating to each department greater responsibility for spending resources, thereby increasing overall financial efficiency by placing all spendable resources at the departmental level where faculty choose among competing priorities. Hoenack and Berg (1980) recommend enhanced links between planning and resource allocation in colleges and universities to minimize the repeated occurence of outcomes that

are unintended and undesirable because of the failure to account for the behavioral effects of existing or proposed incentives linked to budgetary decisions and allocations.

Johnson (1985) researches twenty-four public universities in the United States and reports that departmental differences made it difficult to assess the factors influencing expenditures in various institutions. Johnson finds that larger departments with higher expenditures have higher quality rankings, but that evaluating program quality to expenditures on a disciplinary or institution wide basis is of little statistical value. Johnson also concludes that department size is only related to quality to a certain point, beyond which there are diminishing returns from further budget augmentations.

Tonn (1980) summarizes some of the literature concerning the relationship between resource allocations and organizational effectiveness, concluding that effectiveness is a multidimensional construct consisting of five components: 1) production, 2) efficiency, 3) satisfaction, 4) adaptiveness, and 5) development. Hills and Mahoney (1978) conclude that budgeting conforms more closely to a coalitional model of organizations than a bureaucratic model during periods of resource scarcity in universities. The predominant influence in the allocation of incremental discretionary resources during times of scarcity is externally based power as represented by advisory boards and committees, whose coalition-based influence is not as readily apparent during times of abundant resources.

Pfeffer and Salancik (1974) argue that organizational budgeting within a university is a political process with outcomes strongly impacted by power and social influence processes. On the basis of a study of the University of Illinois, they determine that departmental reputation and faculty representation on campus committees is significantly related to the total amount of resources previously received and that the more powerful the department, the less the allocated resources are a function of departmental workload and student demand. In a companion study, Salancik and Pfeffer (1974) examine the function of providing critical resources to the university in relation to departmental power, finding that departmental power is most highly correlated with three factors: 1) the department's ability to obtain extramural grants and contracts, 2) the department's national prestige, and 3) the relative size of the department's graduate program. Salancik and Pfeffer also find that the use of departmental power in the resource allocation process is inversely related to how scarce and critical the resource in question is.

Lastly, Pfeffer and Moore (1980) research the determinants of power in relation to budget allocations at two large midwestern public universities. Departmental power is assessed in terms of three variables: 1) the ability to generate extramural contract and grant funding, 2) the level of student enrollments, and 3) the level of paradigm development characterizing the department's scientific field. The authors find that paradigm development helps predict departmental contract and grant activity, which in combination with student

enrollment levels, determines departmental power which influences resource allocations. Pfeffer and Moore also report that for campuses facing less scarcity, student enrollment is more highly related and departmental power less strongly related to departmental budget allocations.

RESEARCH METHODOLOGY

This case study of the College of Letters and Science at UCSB from 1977/78 through 1983/84 is designed using a two-step research methodology. Completion of Step One provides a foundation from which to more fully assess departmental resource allocation and utilization by depicting general budgetary trends and exposing a variety of quantitative interrelationships among resource variables. This statistical foundation creates a framework for examining the more subtle aspects of the departmental budget allocation process in Step Two. The emphasis in the second stage of the case study is to develop an overall picture of resource decision making, including identification of those qualitative elements influencing budget allocations which are initially difficult to isolate and quantify.

Several studies have explored resource decision making from a micro perspective within an institution, with particular emphasis on the relative power of academic departments as determinants in the budgetary process. These prior results helped guide the design of the research by suggesting areas where association between variables could be readily identified. Results from a pilot study conducted by the author in 1983 using selected data for the College of Letters and Science from the

1981/82 academic year also contributed to the research design. The general design is affected further by constraints on the availability and comparability of data for all departments within the College. In some instances, the types of data available for this study differ from that used in previous research, so the findings are not solely dependent upon the general trends in earlier findings.

Data Used in the Case Study

The twenty-seven academic departments in the case study are listed in Table I. When completing the actual regression analysis, the total number of departments used is twenty-six instead of twenty-seven, as it was necessary to combine the Art History and Art Studio departments into one department since they were separated into two departments in 1980/81. Combining them into a single department for the entire period under study improved data consistency. The eight dependent variables are defined in Table II and represent the total state funded expenditures for each academic department in the seven years under study. The only exception is that expenditures for employee benefits by each department are not included since these costs are centrally controlled at UCSB. The nine independent variables are defined in Table III and are primarily expressions of full-time equivalency (FTE) for various faculty and staff positions as well as undergraduate and graduate student enrollments. The independent variables also include measures of extramural grant activity and national rankings of program quality.

TABLE I

DEPARTMENTAL GROUPINGS - COLLEGE OF LETTERS AND SCIENCE

FOR THE PERIOD 1977/78 THROUGH 1983/84

Creative and Performing Arts

- Art History
- Art Studio
- Dramatic Art
- Music

Humanities

- Classics
- English
- French/Italian
- German/Slavic
- History
- Linguistics
- Philosophy
- Religious Studies
- Spanish/Portuguese

Mathematics and Sciences

- Biological Sciences
- Chemistry
- Environmental Studies
- Ergonomics
- Geography
- Geological Sciences
- Mathematics
- Physics
- Psychology

Social Sciences

- Anthropology
- Economics
- Political Science
- Sociology
- Speech and Communication

TABLE II

DEPENDENT VARIABLES USED IN CASE STUDY

*ACADSAL - Total academic salary expenditures per department. Includes permanent and temporary faculty and teaching assistants.

*STAFFSAL - Total staff salary expenditures per department. Includes permanent or career support staff.

*GENASST - Total general assistance expenditures per department. Includes casual part-time help such as laboratory assistants, readers, student assistants, and temporary clerical workers.

*OPEREXP - Total operating expense expenditures per department. Includes office supplies, travel, duplicating, telephone, mail, maintenance, computing, and honoraria.

*SUPPORT - Total support budget expenditures per department (GENASST + OPEREXP).

*EQUIP - Total equipment expenditures per department. Includes all instructional, research, and administrative equipment purchased with state funds.

*COMPINS - Total instructional computing expenditures per department. Includes all charges for assigned student computer time as part of the required curriculum.

*GENFUND - Total general fund expenditures per department (ACADSAL + STAFFSAL + SUPPORT + EQUIP + COMPINS).

TABLE III

INDEPENDENT VARIABLES USED IN CASE STUDY

*PERMFTE - Total number of permanent tenure track full-time equivalent faculty per department.

*TEMPFTE - Total number of temporary full-time equivalent faculty per department.

*PROFFTE - Ratio of total number of permanent full-time equivalent senior faculty (full professors) to total number of permanent tenure track full-time equivalent faculty per department.

*TAFTE - Total number of full-time equivalent teaching assistants per department.

*STAFFFTE - Total number of permanent career full-time equivalent support staff per department.

*UGFTE - Total three-quarter average undergraduate full-time equivalent students (undergraduate instructional load) per department.

*GRFTE - Total three-quarter average graduate full-time equivalent students (graduate instructional load) per department.

*EXTRAMUR - Total amount of extramural contract and grant funding awarded per department.

*PROGQUAL - Mean rating of scholarly quality of departmental faculty as reported in a 1981 nationwide study.

As previously noted, the research design for the case study entails two steps as discussed below.

Step One

Step One of the research design is a multivariate analysis of eight dependent variables and nine independent variables for the twenty-seven academic departments in the College. This analysis had two separate components: 1) a primary regression analysis utilizing eight dependent variables and eight independent variables to generate collegewide results; and 2) a regression analysis utilizing eight dependent variables and a single independent variable to generate results for a reduced number of departments focusing on academic program quality.

The Fuller and Battese variance component method (Drummond and Gallant, 1983) is utilized for the primary regression analysis since the intent is to examine both cross sectional and longitudinal differences in the variables. This method yields regression coefficients for each variable based on a pooled analysis of the data which controls for relative cross sectional effects and relative longitudinal effects. This is a common econometric procedure described by several authors such as Hannan and Young (1977), Maddala (1971), and Pindyck and Rubinfeld (1981). The principal advantage of pooling the data is the opportunity to simplify the statistical manipulation required. Moreover, the pooling procedure allows examination of the entire seven year period in a single comprehensive analysis, while still accounting for both cross sectional and longitudinal variations.

The Fuller and Battese method is an error-components model of a standard analysis of covariance. The intercept terms in the

covariance model are not treated as a set of distinct parameters, but instead are viewed as two random variables, one a cross-sectional variable and one a time-series variable. Hence, error components for relative cross sectional effects, relative longitudinal effects, and for the combined cross section by time interaction are generated. An estimated generalized least squares regression is then performed on all dependent variables and independent variables generating regression coefficients and corresponding t-scores. The regression coefficients calculated for the relation between each independent variable and each dependent variable in this study represent the statistical relationship after the three sources of variance reported as error-component estimates have been accounted for.

Before completing the primary regression analysis, distributions of the raw departmental data were examined for approximate normality. In order to create a more normal distribution for each of the variables, the values of the eight dependent variables and the eight independent variables were transformed into logarithm values. These logarithm values are utilized in the actual Fuller and Battese variance component analysis using the TSCSREG Procedure in the Statistical Analysis System (SAS) software available on the IBM 4341 mainframe computer at the UCSB campus.

Since the pooled approach controlled for departmental and time-based differences (on the assumption that such differences are present in the model being examined), a general linear analysis also is conducted to verify the existence of these

differences. The eight dependent variables and eight independent variables used in the pooled analysis are analyzed with time periods as repeated measures and departments as subjects. R-Square results from this general linear analysis help describe the relative impact of departmental differences and longitudinal differences on the quantitative variables included in the study.

The second regression analysis examines the interrelationship between the eight dependent variables from the pooled analysis and a single independent variable representing scholarly quality of academic programs. This analysis is conducted separately for two reasons: 1) it entails a simplified cross sectional analysis since the national quality rankings are available only for a single year; and 2) it uses a reduced number of departments since the national quality rankings are available for only seventeen departments.

This general linear regression analysis of academic quality utilizes the mean rating of the scholarly quality of departmental faculty as measured in the 1981 national study, An Assessment of Research/Doctorate Programs in the United States, by the Conference Board of Associated Research Councils. This measure is then used in three different models as the independent variable. Each model represents a different time period for analysis, with the dependent variable values averages for either the three years prior to the national rankings (1977/78, 1978/79, and 1979/80), the three years after the national rankings (1981/82, 1982/83, and 1983/84), or the entire seven years of the case study (1977/78 through 1983/84). These three models allow for some initial examination of whether any relationships existed

where resource levels might influence quality, quality might influence resources, or the overall connection between the two assuming that quality levels remain constant over short periods of time.

Step Two

Step Two of the research design is a series of interviews with key individuals within Letters and Science departments. The purpose of the interviews is to generate interpretations and explanations of departmental budgetary determinants based on a combination of quantitative and qualitative factors. The respondents represent a randomly stratified sample of twenty Department Chairpersons and ten support staff who held these positions at some time during the seven year period from 1977/78 to 1983/84. The stratified sample of interview respondents is based on the number of departments within a disciplinary area to ensure adequate representation, as follows:

Distribution of Interview Respondents

Grouping	Chairs	Staff	Total
Creative and Performing Arts	3	2	5
Humanities	6	3	9
Mathematics & Sciences	7	3	10
Social Sciences	4	2	6
Total	20	10	30

The interviews consisted of a group of structured questions plus a group of open-ended questions. Respondents were encouraged to elaborate or explain their answers and were promised anonymity. No statistical analysis of the interview

responses is provided due to the small sample size; the results are simply tabulated as percentage distributions.

Limitations

As with any research, this case study had inherent limitations:

1) The time period under study is only seven years, so the results reflect the immediate past and are not representative of long-term resource decision making patterns.

2) The findings are specifically applicable to the College of Letters and Science at UCSB, and generally applicable to large colleges or schools of arts and sciences in public doctoral granting research institutions. This left out a number of postsecondary educational institutions in the United States.

3) The limitations of institution specific data are further complicated by interpretive results which indicate unique factors may influence resource allocations.

4) All the statistical results only reflect linear relationships between variables; they do not infer causality, but merely suggest that some relationship does or does not exist.

5) All the qualitative results only reflect individual perceptions and opinions, and can be biased by range of uncontrollable factors such as personal values, beliefs, and experiences.

Despite these limitations, it is still possible to utilize these research findings to better understand the determinants of budget allocations at the departmental level within a public research university. Other studies have demonstrated general traits and patterns within certain types of institutions and among faculty, students, and staff. This allows for some generalization about the departmental budget allocation process based on the experiences at UCSB to other similar institutions.

QUANTITATIVE RESULTS

The results from the Fuller and Battese variance component analysis constitute the predominant portion of the statistical findings. The least squares regression coefficients represent the relationships between the independent variables and the dependent variables after adjusting for the variance due to differences between departments (e.g., relative cross sectional effects), the variance due to time (e.g., relative longitudinal effects), or the variance due to the combination of these factors (e.g., the cross section by time interaction).

As a verification against the results derived from the Fuller and Battese variance component analysis, the eight dependent variables and eight independent variables also are subjected to a general linear analysis with time periods as repeated measures and departments as subjects. This analysis discloses the impact of longitudinal effects and cross sectional effects on each of the sixteen variables so as to better understand the relative magnitude of the Fuller and Battese results.

A separate assessment of academic quality using only seventeen departments constitutes another portion of the quantitative findings. The quality variable is taken from the mean rating of the scholarly quality of a department's faculty as measured in a 1981 national study. Since these ratings represented only a single time period, departmental expenditures are averaged three ways to generate dependent variables, with the quality rankings used as independent variables to calculate correlations.

Analysis of Fuller and Battese Results

The Fuller and Battese variance component analysis for all departments is calculated using one hundred and seventy-three degrees of freedom, and the findings indicate that a significant relationship exists for twenty-one of the sixty-four possible variable combinations. Table IV lists these statistically significant relationships while Table V presents all sixty-four regression coefficients plus the variance component estimates for the eight dependent variables. The specific results for each dependent variable are reviewed below.

Academic Salaries - Academic salaries are significantly related to four independent variables, all of which represent some component of academic salaries: permanent faculty FTE (0.745), the ratio of senior faculty FTE to total faculty FTE (0.662), teaching assistant FTE (0.169), and temporary faculty FTE (0.092).

Staff Salaries - Staff salaries are significantly related to two independent variables: staff FTE (1.318) and the ratio of senior faculty FTE to total faculty FTE (0.446).

General Assistance - General assistance salaries are not significantly related to any of the independent variables.

Operating Expenses - Operating expenses are significantly related to two independent variables: staff FTE (1.021) and graduate student FTE (0.214).

Support Budget - Support budget expenditures are significantly related to three independent variables: staff FTE

TABLE IV

STATISTICALLY SIGNIFICANT REGRESSION COEFFICIENTS
FOR ALL DEPARTMENTS IN THE COLLEGE

Dependent Variables	Independent Variables Significant at the 0.05 Level
ACADSAL	PERMFTE (0.745), PROFFTE (0.662), TAFTE (0.169), TEMPFTE (0.092)
STAFFSAL	STAFFFTE (1.318), PROFFTE (0.466)
GENASST	NONE
OPEREXP	STAFFFTE (1.021), GRFTE (0.214)
SUPPBUD	STAFFFTE (0.703), GRFTE (0.240), EXTRAMUR (0.013)
EQUIP	PERMFTE (-2.987), STAFFFTE (2.333), EXTRAMUR (0.098)
COMPINS	UGFTE (2.287)
GENFUND	PERMFTE (0.528), PROFFTE (0.516), STAFFFTE (0.253), TAFTE (0.168), TEMPFTE (0.067), GRFTE (0.036)

TABLE V: REGRESSION COEFFICIENTS FOR ALL DEPARTMENTS IN THE COLLEGE

Independent Variables	Dependent Variables: ACAD SAL	STAFF SAL	GEN ASST	OPER EXP	SUPP BUD	EQUIP	COMP INS	GEN FUND
UGFTE	0.005	-0.005	0.139	0.157	0.153	0.975	2.287*	0.007
GRFTE	0.013	0.026	0.068	0.214*	0.240*	0.535	0.459	0.036
PERMFTE	0.745*	-0.108	-0.008	-0.399	-0.287	-2.987*	-0.804	0.528*
TEMPFTE	0.092*	-0.010	0.062	-0.028	0.053	0.141	-0.225	0.067*
TAFTE	0.169*	0.028	0.048	0.252	0.084	0.759	0.856	0.168*
STAFFFTE	0.044	1.318*	0.285	1.021*	0.703*	2.333*	0.522	0.253*
PROFFTE	0.662*	0.466*	0.279	0.105	0.379	-3.032	-0.088	0.516*
EXTRAMUR	0.001	-0.001	0.014	0.011	0.013*	0.098*	0.057	0.002
Variance Component Estimates								
Relative Cross Sectional Effects	0.0006	0.0045	0.0681	0.0223	0.0283	0.2280	1.1692	0.0013
Relative Longitudinal Effects	0.0012	0.0018	0.0000	0.0019	0.0016	0.0341	0.0000	0.0014
Cross Section By Time Interaction	0.0004	0.0027	0.0268	0.0192	0.0142	0.5835	0.4632	0.0006

* = Statistically Significant at 0.05 Level

(0.703), graduate student FTE (0.240), and extramural contracts and grants awarded (0.013).

Equipment - Equipment expenditures are significantly related to three independent variables: permanent faculty FTE (-2.987), staff FTE (2.333), and extramural contracts and grants awarded (0.098).

Computer Instruction - Computer instruction expenditures are significantly related to one independent variable: undergraduate student FTE (2.287).

General Fund - Total general fund expenditures are significantly related to six independent variables: permanent faculty FTE (0.528), the ratio of senior faculty FTE to total faculty FTE (0.516), staff FTE (0.253), teaching assistant FTE (0.168), temporary faculty FTE (0.067), and graduate student FTE (0.036).

Summary - There are several overall trends apparent from these results. First, staff FTE is significantly related to five dependent variables, with a moderate or strong positive relationship in four of the five cases. Second, permanent faculty FTE and senior faculty FTE are significantly related to three dependent variables, with a moderate or strong positive relationship in all three cases. Third, graduate student FTE is significantly related to three dependent variables, with all three relationships positive but weak. Fourth, teaching assistant FTE is significantly related in a positive manner to two dependent variables, but both relationships are weak. Fifth, temporary faculty FTE and extramural contracts and grants awarded are significantly related to two dependent variables, with all

the relationships positive but negligible. Sixth, undergraduate student FTE is significantly related to only one dependent variable, computer instruction, and the relationship is strong. Seventh, no independent variables are significantly related to general assistance expenditures. Lastly, a pattern emerges among the variance component estimates as five of the eight dependent variables indicate that the variance due to relative cross sectional effects is greater than the variance due to relative longitudinal effects or the variance due to the cross section by time interaction.

Department and Time-Based Differences

The variance component estimates from the Fuller and Battese analysis indicate that there is considerable variance due to either relative cross sectional effects, relative longitudinal effects, or the cross section by time interaction. As it was expected that these departmental and time-based differences would be present, a separate general linear analysis is presented to assess the impact of departmental differences and longitudinal differences on each of the independent variables and dependent variables. The results are summarized in Table VI.

This general linear analysis confirms that differences in variable values between departments and over time were substantial. Controlling for these sources of variance improves the ability to analyze possible statistical relationships existing in common between departments. The proportion of variance explained for the sixteen variables ranges from a low R-Square of 0.621 to a high R-Square of 0.975, with all results

TABLE VI

COLLEGEWIDE PROPORTION OF VARIATION ACCOUNTED FOR (R^2) BY DEPARTMENT AND TIME-BASED DIFFERENCES

Variable	R-Square	Variable	R-Square
UGFTE	0.955*	ACADSAL	0.975*
GRFTE	0.933*	STAFFSAL	0.962*
PERMFTE	0.967*	GENASST	0.892*
TEMPFTE	0.856*	OPEREXP	0.919*
TAFTE	0.947*	SUPPBUD	0.935*
STAFFFTE	0.970*	EQUIP	0.621*
PROFFTE	0.854*	COMPINS	0.878*
EXTRAMUR	0.707*	GENFUND	0.974*

(*) Indicates that R-Square value is statistically significant at the 0.05 level.

statistically significant (below the 0.05 level). With the exception of equipment expenditures (EQUIP) with an R-Square of 0.621, and the dollar amount of extramural contracts and grants awarded (EXTRAMUR) with an R-Square of 0.707, the remaining fourteen variables have reported R-Squares of 0.850 or greater.

Analysis of Results Using Quality Rankings

This discussion reviews the statistical findings obtained from a general linear regression analysis of the eight dependent variables and a single independent variable representing academic program quality. The results are for the seventeen Letters and Science departments for which national quality rankings were available (Conference Board of Associated Research Councils, 1981):

Departments With National Scholarly Quality Rankings

Anthropology	Mathematics
Biological Sciences	Music
Chemistry	Philosophy
Economics	Physics
English	Political Science
French/Italian	Psychology
Geological Sciences	Sociology
German/Slavic	Spanish/Portuguese
History	

Three analyses average the dependent variables for: 1) the first three years of the study; 2) the last three years of the study; and 3) all seven years of the study. The first analysis examines possible relationships where resource levels might contribute to quality, the second analysis examines possible relationships where quality might contribute to resource acquisition, and the third analysis examines possible relationships between quality and resources assuming that

programmatic quality holds relatively steady over a short period of seven years.

The results from these three analyses are presented in Table VII. A review of the R-Square values indicates that program quality is significantly related to only two dependent variables, staff salaries and equipment expenditures. The R-Square values for staff salaries and program quality are small and almost identical in each of the three time periods: 0.262 for 1977/78 to 1979/80, 0.253 for 1981/82 to 1983/84, and 0.258 for 1977/78 to 1983/84. The R-Square values for equipment expenditures and program quality are slightly larger but also of similar magnitude in each of the three time periods: 0.317 for 1977/78 to 1979/80, 0.332 for 1981/82 to 1983/84, and 0.356 for 1977/78 to 1983/84. These results indicate that the proportion of variance explained between program quality and the dependent variables is statistically significant in only six of twenty-four possible combinations.

QUALITATIVE RESULTS

The interview results are presented primarily in narrative form, accompanied by tables depicting the percentage distribution of responses to certain questions. Little statistical analysis of the interview responses is possible for two reasons: 1) the total respondent population was very small (N = 30) for statistical purposes; and 2) the interview process included both structured and open-ended questions, and respondents were encouraged to elaborate on answers or to offer opinions and perceptions on a variety of resource-related issues. The respondents also were promised anonymity, so there is no attempt

TABLE VII

COLLEGEWIDE PROPORTION OF VARIATION ACCOUNTED FOR (R2)
BY INDEPENDENT VARIABLE = PROGRAM QUALITY

DEPENDENT VARIABLE	R-SQUARE 77/78-79/80	R-SQUARE 81/82-83/84	R-SQUARE 77/78-83/84
ACADSAL	0.009	0.004	0.005
STAFFSAL	0.262*	0.253*	0.258*
GENASST	0.178	0.123	0.145
OPEREXP	0.107	0.095	0.105
SUPPBUD	0.138	0.107	0.123
EQUIP	0.317*	0.332*	0.356*
COMPINS	0.008	0.047	0.025
GENFUND	0.069	0.076	0.074

(*) Indicates that R-Square value is statistically significant at the 0.05 level.

to identify the individual or department in the review of the interview findings.

The interviews included a few questions which provide some profile of the respondents. The Department Chairpersons interviewed averaged 4.3 years in that position and had served an average of 19.4 years as faculty members at UCSB. The department staff interviewed averaged 5.3 years in the position of Management Services Officer or Administrative Assistant and had served an average of 13.1 years as staff members at UCSB. Respondents report that the frequency level of interaction between the department and the central administration is considerable, as 26% indicated they had very frequent interaction, 57% indicated they had frequent interaction, and 17% indicated they had infrequent interaction. Moreover, the overwhelming majority of respondents agreed that Department Chairpersons spend 50% to 75% of their time on departmental administrative business, with their remaining time divided equally between teaching and research.

The results of the structured questions are summarized as percentage distributions for each specific factor across each respondent category. The structured questions differ from the open-ended questions in that respondents are asked to select from one of three possible answers for each specific factor (e.g., very important, moderately important, or not important). After selecting one of the three possible answers, respondents are then allowed to elaborate or qualify their answer. Responses to the structured questions are divided into three areas: 1) the

importance of quantitative factors; 2) the importance of qualitative factors; and 3) the importance of external factors.

Importance of Quantitative Factors

The first set of structured questions concerns the relative importance of the nine independent variables utilized in the previous quantitative analysis. The percentage distribution of respondents selecting a particular level of importance for each of the nine factors is summarized in Table VIII.

Undergraduate Student FTE - The combined responses for the importance of undergraduate student FTE indicated that 43% considered it very important, 37% considered it moderately important, and 20% considered it not important. A frequent comment about undergraduate student FTE was that it was generally more important in a negative way, in that declining enrollments more often led to budget reductions than increasing enrollments led to budget augmentations.

Graduate Student FTE - The combined responses for the importance of graduate student FTE indicated that 23% considered it very important, 47% considered it moderately important, and 30% considered it not important. The general perception about graduate student FTE was that it only influenced allocations of teaching assistantships, but not other resources.

Permanent Faculty FTE - The combined response for the importance of permanent faculty FTE indicated that 43% considered it very important, 40% considered it moderately important, and 17% considered it not important. There was a consensus about permanent faculty FTE that its relative importance in the budget

TABLE VIII

IMPORTANCE OF QUANTITATIVE FACTORS IN DEPARTMENTAL BUDGET ALLOCATIONS

Quantitative Factor	Department Chairpersons (N=20)			Department Staff (N=10)			Total Respondents (N=30)		
	1	2	3	1	2	3	1	2	3
UGFTE	35%	35%	30%	60%	40%	0%	43%	37%	20%
GRFTE	25%	50%	25%	20%	40%	40%	23%	47%	30%
PERMFTE	50%	30%	20%	30%	60%	10%	43%	40%	17%
TEMPFTE	10%	30%	60%	10%	20%	70%	10%	27%	63%
PROFFTE	70%	30%	0%	60%	20%	20%	67%	26%	7%
TAFTE	0%	0%	100%	0%	0%	100%	0%	0%	100%
STAFFFTE	0%	25%	75%	20%	10%	70%	7%	20%	73%
EXTRAMUR	55%	35%	10%	90%	10%	0%	67%	26%	7%
PROGQUAL	90%	10%	0%	80%	20%	0%	87%	13%	0%

KEY:
1 - VERY IMPORTANT
2 - MODERATELY IMPORTANT
3 - NOT IMPORTANT

process was primarily as "a comparative yardstick of program size".

Temporary Faculty FTE - The combined responses for the importance of temporary faculty FTE indicated that only 10% considered it very important, 27% considered it moderately important, and 63% considered it not important. The comment repeated by faculty and staff concerning temporary faculty FTE was that it was rarely a factor in budget allocations except in those departments heavily dependent upon non-tenured faculty for teaching over long periods of time.

Ratio of Senior Faculty FTE to Total Faculty FTE - The combined responses for the importance of senior faculty rank indicated that 67% considered it very important, 26% considered it moderately important, and only 7% considered it not important. There was a perception that faculty seniority influenced allocations, especially if these individuals are viewed as "productive and of high quality".

Teaching Assistant FTE - Responses of Department Chairpersons and department staff were unanimous with regards to the unimportance of teaching assistant FTE as a factor in the departmental budget process. Respondents answered that 0% considered it very important, 0% considered it moderately important, and 100% considered it not important.

Support Staff FTE - The combined responses for the importance of support staff FTE indicated that only 7% considered it very important, 20% considered it moderately important, and 73% considered it not important. An interesting comment was that the quantity of staff FTE was not really a factor in

budgetary allocations, but the "quality of staff work contributed to the efficient use of resources" which often allowed departments to acquire additional resources.

Extramural Contracts and Grants Awarded - The combined responses for the importance of extramural contracts and grants indicated that 67% considered it very important, 26% considered it moderately important, and only 7% considered it not important. A frequent comment concerning extramural contract and grant activity was that it was "a major factor in explaining why other departments received allocations", but not a factor in their particular case.

National Ranking of Program Quality - The combined responses for the importance of national rankings of program quality indicated that 87% considered it very important, only 13% considered it moderately important, and 0% considered it not important. The consensus concerning quality was that it "always" mattered in resource allocations and that it was the "most significant" quantitative or qualitative factor in department budgets.

Importance of Qualitative Factors

The second set of structured questions concerns the relative importance of eight qualitative factors that were created based on indicators discussed in relevant literature as well as the findings of the pilot study. The percentage distribution of respondents selecting a particular level of importance for each of the eight factors is summarized in Table IX.

TABLE IX

IMPORTANCE OF QUALITATIVE FACTORS IN DEPARTMENTAL BUDGET ALLOCATIONS

	Department Chairpersons (N=20)			Department Staff (N=10)			Total Respondents (N=30)		
Qualitative Factor	1	2	3	1	2	3	1	2	3
Departmental Prestige/Pecking Order	65%	20%	15%	70%	30%	0%	67%	23%	10%
Relations with Central Administration	75%	25%	0%	80%	10%	10%	77%	20%	3%
Faculty Involvement in Governance	20%	50%	30%	60%	20%	20%	34%	40%	26%
Resource Management Performance	25%	40%	35%	60%	30%	10%	37%	37%	26%
Programmatic Credibility	70%	30%	0%	80%	20%	0%	74%	26%	0%
Historical Trends/Reputation	60%	30%	10%	80%	20%	0%	67%	26%	7%
Nature of Discipline	75%	25%	0%	80%	20%	0%	77%	23%	0%
Departmental Size	55%	25%	20%	80%	20%	0%	77%	23%	0%

KEY:
1 - VERY IMPORTANT
2 - MODERATELY IMPORTANT
3 - NOT IMPORTANT

Departmental Prestige/Pecking Order - The combined responses for the importance of departmental prestige or placement in the campus pecking order indicated that 67% considered it very important, 23% considered it moderately important, and only 10% considered it not important. A frequent comment about departmental prestige was that placement in the campus pecking order was "crucial" in budget allocations, but that "other departments always benefited from higher prestige" and better relative ranking on campus.

Relations with Central Administration - The combined responses for the importance of relations between a department and the central administration indicated that 77% considered it very important, 20% considered it moderately important, and only 3% considered it not important. The general perception about relations between a department and the central administration was that it cut both ways. Positive relations in the form of "cooperation and effective communications" helped departments acquire resources, especially for new faculty or one-time items, while negative relations in the form of "adversarial feelings and mis-trust" hindered departments in the resource process.

Faculty Improvement in Governance - The combined responses for the importance of faculty involvement in campus governance were almost evenly divided as 34% considered it very important, 40% considered it moderately important, and 26% considered it not important. No clear consensus emerged concerning faculty involvement in campus governance, although many faculty and staff perceived an indirect influence on budget allocations from

personal relationships developed through participation in various committees and task forces.

Resource Management Performance - The combined responses for the importance of resource management performance by a department were evenly divided as 37% considered it very important, 37% considered it moderately important, and 26% considered it not important. Respondents commented that a "disincentive system" existed for department budget allocations, where operating deficits were rewarded with additional allocations while operating surpluses were taken away. There also was a perception that allocations on the margin were driven by the concept of "the squeaky wheel gets the grease", where individual faculty bartered for special budget augmentations irrespective of department priorities, and such a process further "diluted any incentive to properly manage departmental resources".

Programmatic Credibility - The combined responses for the importance of programmatic credibility indicated that 74% considered it very important, 26% considered it moderately important, and 0% considered it not important. There was a consensus that a department's programmatic credibility was definitely important in budget allocations, particularly when proposing new research initiatives or the expansion or modification of academic programs.

Historical Trends/Reputation - The combined responses for the importance of the historical reputation and general performance trends of a department indicated that 67% considered it very important, 26% considered it moderately important, and

only 7% considered it not important. The general perception about departmental reputations from both faculty and staff was that they were somewhat based on "personalities" and that other departments always had better reputations and consequently received more resources. Included was the observation that reputations were "often a negative factor in budget allocations, in that base budgets were carried forward year-to-year and departments were typecast accordingly."

Nature of Disciplinary Area - The combined responses for the importance of the nature of a department's disciplinary area indicated that 77% considered it very important, 23% considered it moderately important, and 0% considered it not important. There was a range of varying interpretations concerning the importance of a department's disciplinary area in budget allocations. Some perceived real differences in the cost of instruction and research in certain fields, while others believed allocations were the product of some disciplines being favored over others. This favoritism was viewed as "publicity-based", not "quality-based"; meaning that some disciplines were "favored because of their ability to generate campus exposure, not because of the inherent quality of their programs".

Departmental Size - The combined responses for the importance of departmental size indicated that 63% considered it very important, 23% considered it moderately important, and 14% considered it not important. A frequent comment regarding the influence of departmental size was that "the rich get richer", or more appropriately, "them that has, gets"!

Importance of External Factors

The third set of structured questions concerns the relative importance of six external factors that were based on indicators discussed in relevant literature as well as the findings of the pilot study. There is little elaboration in the answers to these questions as faculty and staff admitted they were "really guessing" at the amount of influence external factors had on department budgets. The percentage level of importance for each of the eight factors is summarized in Table X.

Condition of California Economy - The combined responses for the importance of the condition of the California economy followed this same pattern as 70% considered it very important, 26% considered it moderately important, and only 4% considered it not important. The general perception about the condition of California's economy was that it "impacted upon the amount of resource flexibility available", as evidenced in the aftermath of Proposition 13.

State Budgetary Priorities - The combined responses for the importance of state budgetary priorities indicated that 83% considered it very important, 17% considered it moderately important, and 0% considered it not important. A frequent comment about state budgetary priorities was to contrast the comparative priority of the University of California for funding under Governor Brown (low priority) as compared to Governor Deukmejian (high priority).

Federal Budgetary Priorities - The combined responses for the importance of federal budgetary priorities indicated that 17% considered it very important, 37% considered it moderately

TABLE X

IMPORTANCE OF EXTERNAL FACTORS IN DEPARTMENTAL BUDGET ALLOCATIONS

External Factor	Department Chairpersons (N=20)			Department Staff (N=10)			Total Respondents (N=30)		
	1	2	3	1	2	3	1	2	3
Condition of California Economy	70%	25%	5%	70%	30%	0%	70%	26%	4%
State Budgetary priorities	75%	25%	0%	100%	0%	0%	83%	17%	0%
Federal Budgetary priorities	20%	30%	50%	10%	50%	40%	17%	37%	46%
Relations between Systemwide/State	60%	25%	15%	80%	20%	0%	67%	23%	10%
Relations between campus/Systemwide	35%	40%	25%	30%	50%	20%	34%	43%	23%
Relations between campus/community	10%	25%	65%	0%	30%	70%	7%	26%	67%

KEY:
1 - VERY IMPORTANT
2 - MODERATELY IMPORTANT
3 - NOT IMPORTANT

important, and 46% considered it not important. Respondents did not perceive of a "strong connection" between department budgets and federal funding priorities.

Relations Between Systemwide and State - The combined responses for the importance of relations between systemwide headquarters and the state indicated that 67% considered it very important, 23% considered it moderately important, and only 10% considered it not important. Respondents commented that relations between systemwide headquarters and the State of California are "essential in terms of the University's credibility", but it appeared that they viewed systemwide more as a place to fix blame than as a place to give credit.

Relations Between Campus and Systemwide - The combined responses for the importance of relations between the campus and systemwide headquarters indicated that 34% considered it very important, 43% considered it moderately important, and 23% considered it not important. The general perception concerning relations between the campus and systemwide was similar to that for the relations between systemwide and the state. The "absence of resources" was seen as a negative reflection upon the campus administration's ability, while an abundance of resources was not seen as a positive reflection upon campus administration's ability.

Relations Between Campus and Community - The combined responses for the importance of relations between the campus and the community indicated that only 7% considered it very important, 26% considered it moderately important, and 67% considered it not important. The consensus was that relations

between the campus and the community are only a factor in specialized programs such as the performing arts, where positive community response and participation might help justify additional budgetary support.

Responses to the Open-Ended Questions

The following discussion reviews the results of the open-ended questions, although there are no tables summarizing the results since the responses varied in substance, length, and tone. Responses are divided into three areas: 1) description of the department budget process; 2) general factors influencing department budgets; and 3) the central administration's approach to departments.

Description of Department Budget Process - When asked to describe the process by which departments receive resources, both Department Chairpersons and department staff identified five descriptors which they perceived conceptually defined the budgetary process: 1) emphasis on centralized control; 2) resource scarcity; 3) inconsistent allocation standards; 4) highly selective; and 5) influenced by personalities.

General Factors Influencing Department Budgets - When asked to discuss the general factors influencing departmental budget allocations, both Department Chairpersons and department staff identified six factors which they perceived to be significant: 1) program quality; 2) enrollments; 3) new initiatives; 4) personalities; 5) department credibility; and 6) condition of the external economy.

Central Administration's Approach to Departments - Department Chairpersons and department staff identified four general characteristics of the central administration's approach to departmental budget allocations: 1) reactionary but supportive; 2) risk-taking; 3) factional appeasement; and 4) pecking order oriented.

SYNTHESIS OF FINDINGS

The quantitative and qualitative results presented in the previous discussion provide a complex picture of the departmental budget allocation process. It is clear that a combination of factors, some which can be measured and some which cannot be measured, contribute to the definition of each department's budget. It also is clear that no easily discernible pattern exists for comparing the distribution of resources across departments or disciplinary areas, let alone across institutions.

A fundamental reason for conducting this research was recognition of the fact that a general fund resource distribution paradigm for academic departments did not exist. Hence, the two-step case study of the College of Letters and Science at UCSB was viewed as a means to begin understanding some of the determinants of departmental budget allocations within a public doctoral-granting research university. The quantitative and qualitative results provide the basis upon which to draw inferences about the budgetary process in an effort to identify these determinants. However, any inferences drawn from this collective data can only be accomplished within certain limitations, including the prior existence of academic departments and a predetermined pecking order in terms of permanent resource distribution at UCSB.

Therefore, synthesizing the results must recognize the unique characteristics and conditions in existence at UCSB throughout the period under study, which qualifies the findings as well as their generalizability.

The overall perspective of the departmental budget allocation process in the College of Letters and Science can be summarized in terms of some general characteristics identified in the quantitative and qualitative analyses. Below is a brief review of these contrasting perspectives.

Quantitative Perspective

From the quantitative perspective, the first observation is that budget allocations are influenced by disciplinary differences inherent in academic departments, as no clear statistical pattern emerges for describing the distribution of resources because of substantial variance due to cross sectional effects. This result is best explained by the nature of the academic enterprise as a complex collection of diverse scholarly specializations. Departments vary in terms of size (e.g., number of faculty and staff, number of students, etc.), mode and level of instruction (e.g., lecture, laboratory, etc.), nature of scholarly inquiry (e.g., experimental, theoretical, etc.), all of which obviously alters the on-going instruction and research costs by discipline. Certain academic specializations are simply more expensive than others (e.g., Chemistry as opposed to History), irrespective of other factors, and cross sectional variation is clearly anticipated when analyzing annual expenditures over a period of time.

Second, many of the quantitative variables which explain some portion of department budget allocations reflect the number of full-time equivalent academic or non-academic staff, and therefore, are as much an indication of the salary intensive structure of university expenditures as anything. Universities, by their very nature, are labor intensive organizations, so it is a reasonable expectation that the number of academic staff and the number of support staff might be related to total expenditures, since salary expenses constitute the overwhelming majority of the general fund. This result means that some of the position utilization variables function merely as natural determinants of budget allocations for salaries (e.g., permanent faculty FTE is related to academic salaries or staff FTE is related to staff salaries) but not as determinants for other expenditure areas.

Third, the number of support staff is strongly related to department operating expenses, support budget, and equipment expenditures. A possible explanation is that the number of staff is an indirect measure of departmental wealth, in the sense that the level of support staffing reflects how departments utilize the non-academic portion of their resources. Since the case study includes departments of all sizes and disciplines, this finding suggests that the number of staff is a reliable indicator of non-salary expenditures across departments, although the interview responses confirm that the number of staff may not be a factor in the actual allocation of these resources.

Fourth, undergraduate student enrollment is strongly related to computer instruction expenditures, but nothing else.

Allocations of funds for computer instruction are allocated primarily on the basis of enrollments, and the predominance of undergraduate students at UCSB reinforces the strength of this finding. However, the absence of any other relationship for enrollment to expenditures is contrary to the commonly accepted enrollment-driven model of resource allocations used in public universities throughout the United States. These findings suggest that at UCSB, the internal allocation of resources does not follow the external model by which a campus receives its general funds. This could be partly a product of the dual mission of the research university, since the basic research of faculty rarely requires the presence of students in order to be properly conducted. This result also could be due to institutional autonomy, as the campus has considerable discretion with which to allocate resources for instruction and research. In this sense, the only restrictions tied to general fund expenditures are that they must be used to support instruction and research, but not necessarily in areas of high enrollment. It should be noted that graduate student enrollment is marginally related to support budget expenditures, which reinforces the emphasis on research as opposed to undergraduate instruction.

Fifth, the quantitative results indicate a strong inverse relationship between the number of permanent faculty and equipment expenditures. It is possible that since large equipment expenditures are concentrated in the Laboratory Sciences year-to-year, this general inverse relationship reflects a longitudinal pattern of low equipment allocations in the

Humanities and the Social Sciences where there are large numbers of faculty.

Sixth, contrary to the qualitative findings, the quantitative results do not indicate the presence of a strong relationship between the amount of extramural contracts and grants, program quality rankings, or faculty rank with any of the expenditure categories. A partial explanation for extramural contracts and grants is similar to that for permanent faculty and equipment (above), in that extramural funding is concentrated in a small number of departments, minimizing its potential significance. The absence of a strong finding for the program quality rankings may be attributable to problems with definition. When respondents overwhelmingly rated program quality as very important, they generically referred to all measures and perceptions of quality, both internal and external to the institution. A single measure of program quality based on mean national rankings of a limited number of departments could be too narrowly defined to address the broader concept of quality articulated by faculty and staff. The result for faculty rank, or the ratio of the number of senior faculty to the number of total faculty, is difficult to explain although the overall scope of a Collegewide model may minimize the presence of faculty rank as a predictor of departmental budget needs when viewed in the aggregate.

Qualitative Perspective

From the qualitative perspective, the first observation is that a considerable consensus is evident regarding eleven factors from the structured interview questions which two-thirds

or more of the respondents considered very important in the departmental budget allocation process. Most of these factors reflect the unique culture and governance of research universities, and generally support the quantitative results emphasizing departmental differences and the absence of an enrollment-driven resource allocation system. Interestingly, these eleven factors are not necessarily institution specific; they define a broad interactive process within any large educational organization:

Eleven Factors Considered 'Very Important'

Factor	% Response
Program Quality	87%
State Budget Priorities	83%
Nature of Discipline	77%
Relations w/Central Administration	77%
Programmatic Credibility	74%
Condition of California Economy	70%
Extramural Contracts/Grants	67%
Historical Trends/Reputation	67%
Prestige/Pecking Order	67%
Ratio of Senior Faculty FTE	67%
Relations Between System/State	67%

These eleven factors included five qualitative factors, three quantitative factors, and three external factors. With the exception of the external factors, the remaining factors reflect unique aspects of higher education institutions and reinforce the contention that internal budget allocations do not necessarily follow any systematic pattern between departments. Department specific issues (e.g., quality, the disciplinary area, interpersonal relations, credibility, historical reputation, and placement in the campus pecking order), are perceived by the

majority interviewed as very important determinants in the department budget allocation process.

Second, the open-ended comments clearly indicate that departmental budget allocations are influenced in accordance with three interrelated dimensions: 1) economic dimension; 2) interpersonal dimension; and 3) reputational dimension. These three dimensions combine to help define the process governing the distribution of resources to academic departments.

The economic dimension establishes a set of parameters and understandings guiding budgetary decision making. The characteristics of the economic dimension include observations that the budget process is governed by scarcity, the condition of the external economy, enrollment levels (at least in a negative manner), inconsistent and ambiguous standards, and an unwritten rule that departments must be selective in requests. Although these responses were a mixture of opinion and frustration, they help define a structured economic sub-system of understandings (if not rules) which guide the allocation of resources to departments.

The interpersonal dimension accounts for the "human role" necessary to achieve budgetary accommodations between departments and the central administration. The characteristics of the interpersonal dimension include observations that the budget process is influenced by the personalities of the participants (including mutual cooperation and affinity between individual faculty, Department Chairpersons, and central administrators), and these personalities are best reflected in a tendency toward centralized control by decision makers, a reactionary but

supportive resource distribution process, and a belief in factional appeasement through individual budget augmentations to persistent faculty. These descriptions also reveal how individual managerial philosophy and style is critical in departmental budget allocations.

The reputational dimension emphasizes the critical nature of departmental quality and credibility in the continuation of budgetary support for both short-term and long-term initiatives. The characteristics of the reputational dimension include observations that the perceived quality of an individual department or program is paramount in the budget process. This is expressed not only in the direct reference to quality by faculty and staff, but also in discussion of how budget allocations are influenced by a department's credibility, placement in the campus pecking order, and willingness to take risks and recommend new initiatives. Hence, departments are perceived as having particular programmatic reputations which generally are altered only through a change-based process of risk; reflecting the fact that departments never begin the resource acquisition process on an equal level.

Third, the departmental participants in the budget process consistently responded in a general tone or manner which indicated two philosophical beliefs: 1) other departments always fared better in the allocation of resources for a variety of reasons; and 2) the allocation of resources was always seen in negative terms.

The perception that others receive more budgetary support is not uncommon in any organization. In the case of the research university, it reflects on the characteristic of departmental specialization, and the difficulty of scholars in one area to understand or appreciate the circumstances or needs of scholars in another area. It also reflects the cogent reality that resource distribution is rarely equitable from the perspective of those on the receiving end. The negative perception of the process is not surprising, and indicates a tendency to view resource distribution from the perspective of a glass being half empty as opposed to half full. There also is a natural skepticism inherent in academic rigor that makes it virtually impossible for participants to avoid commenting in a critical way about any on-going institutional process.

CONCLUSIONS

Drawing conclusions from the large volume of data analyzed in this case study requires some degree of selectivity. The purpose in this brief review is to capture the essence of the specific research and portray the elements of the resource allocation process which best explain or predict general fund departmental expenditure levels. The listing does not suggest an order of magnitude, but merely organizes the conclusions into a cohesive pattern.

1. The results of this case study are in accordance with general observations from the literature. For example, the generally accepted paradigm of public budgeting as a rational, formula-based process does not adequately describe university budgeting as predicted by Wildavsky (1979). The political model

of resource decision making as articulated by Baldridge (1971) and Baldridge, et al (1978) is visible in the interpersonal dimension of campus budgeting, as is Balderston's (1973) contention that institutions rely on intuitive decision making more than numerical decision making. The findings of Dressel and Simon (1976) that departmental differences are a major factor in the distribution of resources is also confirmed in this research, as is the observation of Cogan (1980), Hackman (1983), Pfeffer and Moore (1980), and Pfeffer and Salancik (1974), that departmental budgets are determined by reputational power and social influence processes. In addition, Freeman's (1967) and Johnson's (1985) observation about the difficulties in quantifying budgetary determinants is reinforced by these findings.

2. Cross sectional or departmental differences are paramount in the resource allocation process. This result surfaced in both a quantitative and qualitative manner and addresses the fact that the costs of doing certain kinds of instruction and research varies considerably. Hence, any predictive model must account for disciplinary differences when attempting to assess budgetary determinants. In contrast, longitudinal differences are present between departments, but these time-based effects are not as substantial as cross sectional effects, suggesting that budgetary changes over time are relatively similar once departmental differences are accounted for.

3. In general, student enrollment is not a consistent budgetary determinant for academic departments. The quantitative and qualitative results indicate that enrollment has some relationship to resources which is difficult to identify in a relatively stable environment, such as UCSB experienced between 1978 and 1984. In reality, the subtle influence afforded to enrollment (even in negative terms) may be merely a reflection of its importance in generating state support for the university, since it is rarely seen as a variable for internal allocation. The relative unimportance of undergraduate student enrollment at UCSB within the specific limitations of this study also suggests that this means of generating state budget support could be used to subsidize research programs, graduate and professional studies, or other activities within the institution.

4. Program quality is a budgetary determinant for academic departments. Quality, in its many shapes and sizes, is repeatedly mentioned as the predominant long-term factor in departmental budget allocations. This surfaced in perceptions of departmental credibility, prestige, and reputation both internal and external to the institution, combining to define a reputational dimension. Interestingly, the various images of quality reflected subjective assessments so a reliable quantitative indicator of quality never materialized. This means that no quality index may actually exist which influences resource allocations; instead, what is important are the perceptions of program quality considered to be true by the participants in the departmental budget allocation process.

5. A department's ability to be an agent of change is a budgetary determinant for academic departments. This is related to the importance of program quality since new endeavors which attract positive attention are highly valued. However, there is a subtle distinction between these two factors as change may generally have a one-time effect on the distribution of resources, while program quality appears to have an on-going effect. In addition, recognition of change as a budgetary determinant may simply be a fancy way of noting that existing aspects of the academic enterprise are usually taken for granted. In allocating resources, the assumption is that you devote funds available at the margin to new ideas and let current operations continue as is.

6. Interpersonal relationships between campus participants is a budgetary determinant for academic departments. This indicates that images of collegiality notwithstanding, public research universities are quite similar to other large organizations in the sense that resource decision making is influenced by an interpersonal dimension. Who you had lunch with today, and whether they share your perspective of mutual goals and interests, may be as important in budget allocations as what you taught in class or how productive you were in your laboratory.

7. There is an economic dimension governing budgetary allocations to academic departments. Indirectly, the state must be both willing and able to provide resources to the institution, which in turn means that students must want to come to the institution so as to generate those resources. Consequently,

internal budgetary flexibility for the campus is affected by external economic conditions as well as internal budgetary priorities. The economic system also operates within the campus, as resource scarcity dictates certain conditions and understandings which participants must account for and abide by in the overall budget process.

8. The number of support staff in a department is a reliable comparative measure of departmental size. This does not imply that the number of support staff is a budgetary determinant, but it is clearly related to non-salary budget allocations suggesting an indirect link between staff and the consumption of resources within an academic department or program.

9. The external or macro model by which public research universities acquire resources is not necessarily applicable to the internal or micro model by which resources are allocated to academic departments. The institution uses the flexibility inherent in the budget system to distribute resources in ways somewhat different from those for which the state provided them originally. This does not suggest any impropriety, but merely acknowledges that the mix of budgetary allocations across disciplines and purposes continually varies.

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